



7590-01-P

## **NUCLEAR REGULATORY COMMISSION**

**[Docket No. 030-29462; NRC-2019-0167]**

**Consideration of License Amendment Request for Exemption to NRC's Regulations to Remove Radioisotope Thermoelectric Generators from the Department of the Navy Master Material License No. 45-23645-01NA; Permit No. 45-4650-N1NP; Naval Nuclear Power Unit**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Environmental assessment and finding of no significant impact; issuance.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is granting an exemption under its regulations to the U.S. Navy from the decommissioning requirements as it relates to six Radioisotope Thermoelectric Generators (RTGs). The approval would allow the in-situ abandonment of six RTGs on the ocean bottom and subsequent termination of Naval Radioactive Materials Permit No. 45-4650-N1NP, Naval Nuclear Power Unit, Port Hueneme, California.

**DATES:** The environmental assessment and finding of no significant impact referenced in this document are available on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

**ADDRESSES:** Please refer to Docket ID **NRC-2019-0167** when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2019-0167**. Address questions about NRC docket IDs in Regulations.gov to Jennifer Borges; telephone: 301-287-9127; e-mail:

Jennifer.Borges@nrc.gov. For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- **NRC's Agencywide Documents Access and Management System**

**(ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the **AVAILABILITY OF DOCUMENTS** section.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**FOR FURTHER INFORMATION CONTACT:** Robin Elliott, U.S. Nuclear Regulatory Commission, Region I, 2100 Renaissance Boulevard, King of Prussia, Pennsylvania 19406; telephone: 610-337-5076; e-mail: [Robin.Elliott@nrc.gov](mailto:Robin.Elliott@nrc.gov).

**SUPPLEMENTARY INFORMATION:**

**I. Introduction**

The NRC is considering issuance of an exemption to NRC decommissioning requirements for the Master Materials License held by the Department of the Navy, License 45-23645-01NA. The exemption would authorize the removal of six RTGs that are currently permitted for storage on the ocean bottom pending development of a viable disposal option. Therefore, as required by part 51 of title 10 of the *Code of Federal Regulations* (10 CFR), the NRC performed an environmental assessment. Based on the results of the environmental assessment that follows, the NRC has determined not to

prepare an environmental impact statement for the amendment, and is issuing a finding of no significant impact.

## **II. Environmental Assessment**

### *Description of the Proposed Action*

The proposed action would approve the licensee's August 29, 2018, license amendment and associated exemption request, resulting in the in-situ abandonment of six RTGs on the ocean bottom, therefore allowing termination of the permit supporting their storage.

In 1970 and 1977, the Navy emplaced six RTGs in the deep oceans of the North Atlantic and South Pacific at depths greater than 10,000 feet to provide power for acoustic transponders. Currently, the RTGs are buried in silt and are irretrievable and further retrieval attempts are dangerous to personnel and equipment due to the depths involved, according to the U.S. Navy.

Each RTG consists of a strontium-90 titanate heat source, thermoelectric generator, thermal insulation, biological shielding, and a pressure vessel/housing that is designed to withstand at least 20,000 feet of ocean depth. The strontium pellets are sealed in a stainless steel liner. Final encapsulation of the liner is within an alloy that is resistant to seawater corrosion. The strontium capsules are designed to retain their integrity for at least 300 years while exposed to seawater at 10,000 pounds per square inch. Three of the six RTGs utilize a minimum of 270 pounds of depleted uranium shielding, while the remaining three utilized lead shielding. The half-life of strontium-90 is 28.8 years.

In 1978, the Navy attempted to recover three of these RTGs using a manned submersible vehicle. This attempt failed and the deep submergence vehicle was damaged as part of that retrieval attempt. The Navy has expressed concern regarding

danger to personnel and equipment in subsequent attempts to retrieve these RTGs, especially given their buried condition.

Master Material License (MML) No. 45-23645-01NA was issued on March 23, 1987, pursuant to 10 CFR part 30, and has been amended periodically since that time. This MML license authorizes, via Naval Radioactive Materials Permit No. 45-4650-N1NP, these six RTGs. They are currently licensed for storage on the ocean bottom pending development of a viable disposal option.

License termination for such sources is usually accomplished under the regulatory framework of 10 CFR 30.36. The NRC is evaluating a request to exempt the Navy from these requirements in recognition of the irretrievability of these RTGs and to allow the Navy to remove these RTGs from their MML due to the fact that they no longer possess the material (i.e., these RTGs as irretrievable).

#### *Need for the Proposed Action*

The Navy is requesting approval of this permitting action because it has ceased use of the RTGs, is unable to retrieve the sources, and further retrieval attempts are dangerous for personnel and equipment, and therefore to terminate the associated permits.

#### *Environmental Impacts of the Proposed Action*

All of the RTGs are located on the ocean floor at depths greater than 10,000 feet deep and are designed to retain their strontium-90 fuel for 300 years without deformation in a deep ocean environment. The half-life of strontium-90 is 28.8 years. Thus, at the design life of the RTG fuel capsules, 10 half-lives have passed, and the remaining activity of strontium will be indistinguishable from background levels.

Based on photos the staff reviewed in the submittals, it appears that these RTGs are buried or semi-buried in silt. Additionally, each RTG has significant depleted

uranium or lead shielding. This weight, coupled with the fact that these RTGs are buried in varying degrees in the ocean floor, have essentially immobilized them.

The RTGs are in a state where they are semi or completely buried in silt. Given this, and the fact that during a previously attempt to retrieve these RTGs, the deep submergence vehicle was damaged, attempting the same activity again may damage vehicles attempting retrieval. As discussed by the Navy, there is a significant degree of (non-radiological) risk to personnel attempting another retrieval attempt due to the depth and silt accumulation of the RTGs.

The NRC staff evaluated dose assessments if the strontium fuel capsules leak, and determined that doses would be minimal. These RTGS are located in remote areas of the ocean in the deep subsurface. There are a limited number of vehicles capable of reaching depths of 10,000 feet or greater. Given this, the NRC staff finds it unlikely that these RTGs will be intruded upon, as discussed in greater detail in the NRC staff's safety evaluation report.

#### *Environmental Impacts of the Alternatives to the Proposed Action*

Due to the largely administrative nature of the proposed action, its environmental impacts are small. Therefore, the only alternative the staff considered is the no-action alternative, under which the staff would leave things as they are by simply denying the exemption request. This no-action alternative is not feasible as it conflicts with 10 CFR 30.36(d), requiring that a license (permit in this case) be terminated when no principal activities under the license have been conducted for a period of 24 months. It has been greater than 24 months since the licensee (permittee) conducted any principal activities with the sources. Additionally, denying the amendment request would result in no change in current environmental impacts, since the sources are irretrievable. The environmental impacts of the proposed action and the no-action alternative are therefore

the same, and would not result in significant environmental impacts. The staff also considered requiring the Navy to again attempt to retrieve RTGs as a potential alternative. However, based on the information submitted by the Navy and reviewed by the NRC staff, this is not a feasible option, and is therefore not considered further.

#### *Agencies and Persons Consulted*

The NRC staff has determined that the proposed action is of a procedural nature, and will not affect listed species or critical habitat. Therefore, no further consultation is required under Section 7 of the Endangered Species Act. The NRC staff has also determined that the proposed action is not the type of activity that has the potential to cause effects on historic properties. Therefore, no further consultation is required under Section 106 of the National Historic Preservation Act.

### **III. Finding of No Significant Impact**

The NRC staff has prepared this environmental assessment in support of the proposed action. On the basis of this environmental assessment, the NRC finds that there are no significant environmental impacts from the proposed action, and that preparation of an environmental impact statement is not warranted. Accordingly, the NRC has determined that a finding of no significant impact is appropriate.

### **IV. Availability of Documents**

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

<b>DOCUMENT</b>	<b>ADAMS ACCESSION NO.</b>
Department of the Navy letter dated August 29, 2018, "Request for Technical Assistance In the Abandonment of Radioisotope Thermoelectric Generators In Situ At The Bottom Of The Ocean"	ML19165A234

“Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees” (NUREG-1757, Vol.1 Rev. 2)	ML063000243
Safety Evaluation Report Approval of Request to Remove RTGS from Department of Navy License, dated August 13, 2019	ML19226A177

Dated at Rockville, Maryland, this 18<sup>th</sup> day of September, 2019.

For the Nuclear Regulatory Commission.

**Joseph L. Nick,**

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[FR Doc. 2019-20597 Filed: 9/23/2019 8:45 am; Publication Date: 9/24/2019]